## (25 marks)

## Question 2

(a) The first three terms of a geometric series are  $x^2$ , 5x - 8, and x + 8, where  $x \in \mathbb{R}$ . Use the common ratio to show that  $x^3 - 17x^2 + 80x - 64 = 0$ .



(b) If  $f(x) = x^3 - 17x^2 + 80x - 64$ ,  $x \in \mathbb{R}$ , show that f(1) = 0, and find another value of x for which f(x) = 0.



(c) In the case of one of the values of x from part (b), the terms in part (a) will generate a geometric series with a finite sum to infinity.Find this value of x and hence find the sum to infinity.

